



Dart Hawkesbury
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

D3391-021

Job Sheet 168617-A



Part No: D3391-021

Job Qty: 1 ea

Part Name: Fwd Tube Assembly



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 11/20/17

Job Tracking No:

Due Date: 11/30/17

Created By: Linda Lacelle

Type: SOLD

Description:

Note: DWG REV J SHEETS 4,5 IPP A 05.09.13 New issue KJ/JLM IPP B IPP C IPP D 07.03.13 rev F dwg EC IPP E 07.11.07 revG dwg ecn1053P EC verified by: DD IPP Rev:f ECN 1056 07-11-12 DD verified by: EC IPP Rev:G 08-09-08 new process (ecn 08-510) DD verified by:EC IPP Rev:H 08-09-10 revH as per dwg DD verified by:EC IPP Rev I 09.02.02 added hardware EC verified by: DD IPP Rev:J 11.11.14 AS PER REV.I DD verified by:JLM

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup	Run	Workcenter / Supplier	Lead Time	
					hrs	Hrs			
90	Start up Operation	1 Ea	11/29/17	11/29/17	0.00	0.00	Start Up Skidtubes		
100	Skidtubes	1 pcs	11/29/17	11/29/17	0.00	0.82	Skidtubes		
110	CNC Bend Skidtubes	1 pcs	11/29/17	11/29/17	0.00	1.00	CNC Bend Skidtube		
120	QC	1 pcs	11/29/17	11/29/17	0.00	0.00	QC5		
130	CNC Vertical Machining	1 pcs	11/29/17	11/29/17	2.21	1.00	HAAS 1		
140	QC	1 pcs	11/29/17	11/29/17	0.00	0.00	QC2		
150	Mill Conv	1 pcs	11/29/17	11/29/17	0.00	0.27	Mill Conv 1		
160	QC	1 pcs	11/29/17	11/29/17	0.00	0.00	QC2		
170	QC	1 pcs	11/29/17	11/29/17	0.00	0.00	QC8		
180	Skidtubes	1 pcs	11/29/17	11/29/17	0.00	0.82	Skidtubes		
190	QC	1 pcs	11/29/17	11/29/17	0.00	0.00	QC5		
200	HandFinish	1 pcs	11/29/17	11/29/17	0.00	0.33	HandFinish1		
210	QC	1 pcs	11/29/17	11/29/17	0.00	0.00	QC7		
220	Skidtubes	1 pcs	11/29/17	11/29/17	0.00	0.82	Skidtubes		
230	QC	1 pcs	11/29/17	11/29/17	0.00	0.00	QC5		
235	HandFinish	1 pcs	11/29/17	11/29/17	0.00	0.33	HandFinish2		
240	Spray Paint	1 pcs	11/29/17	11/29/17	0.00	0.99	Spray Paint		
250	QC	1 pcs	11/29/17	11/29/17	0.00	0.00	QC14		
254	HandFinish	1 pcs	11/30/17	11/30/17	0.00	0.33	HandFinish4		
256	QC	1 pcs	11/30/17	11/30/17	0.00	0.00	QC5		
260	Packaging	1 pcs	11/30/17	11/30/17	0.00	0.00	Packaging3		
280	QC21-SA	1 Ea	11/30/17	11/30/17	0.00	0.00	QC21		

Part Op 100 - Cut as per dwg.

Descriptions: 110 - Bend as per Dwg D3391 Using Bend Prog 3391021 6.875

130 - 1-Machine as per Folio FA590 Rev. AF & Dwg D3391 Rev. J

150 - Drill X1 Aft cap as per Dwg D3391 .1875" dia

180 - 1-Drill Remaining two holes for tow cap using DT 8819 Locating off of .1875" holes drilled in previous step 2-Drill float bag holes as per Dwg D3391 using DT8798(Do not open tow cap holes to finish size) (ONLY DRILL HOLES MARKED "A") 6-Deburr & Scribe Batch number Inside aft end. 7-Transfer drill D3391-021 with D3391-023

220 - 1-instal spacers as per dwg D3391 A/R Magnabond 6398 batch: M137073 exp. date: 02/01/18 cure time 12hrs. as per QSI015 2- grind crossbolt flush 3-back drill crossbolt if necessary

235 - AND REALODINE AS PER QSI 005

DAS
21
9-00

FEB 0 2018



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K64 1K7
CANADA
TEL.: 1 613 632-5200
Email: sales@dartaero.com
www.dartaerospace.com



Fwd Tube Assembly

PART NO: D3391-021

Revision:

Operation: Start up Operation

Change No:

Mfg Date: 12/05/17
Job No: 168617-A

Job Allocations				
Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	D6013-047	1	63	0
220-Skidtubes	D3670-4-200	4	78	0
254-HandFinish	AEIS-1032-225	10	0	0
	AN3C4A	10	1,343	0
	D3401-041	1	11	0
	D3672-1	4	1,741	0
	D4095-051	1	40	0
	NAS1149C0332R	10	3,709	0
Part Specifications				
Specifications could not be found.				

000620

560728

086064
501464
AEIS
5019394
FIS 540
FIS 0074
N159402-1231
5014804

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By	
								Lead hand / Supervisor Approval Verification	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER :							
Misidentified ☐	Past Due ☐								

INSTALL D3670-4200 SPACER
SEAL WITH MAGNOBOND 6398
GRIND FLUSH
PRIOR TO PAINTING
4 PL

DETAIL B



INSTALL
AELS-1032-225
AFTER FINISH
10 PL

D4095-051
WEARSHOE

AN3C4A BOLT
NAS1149C0332R WASHER
6 PL

D3391-021 FWD TUBE ASSEMBLY ASSEMBLY DETAIL

SEAL WITH
SIKAFLEX-241/-291

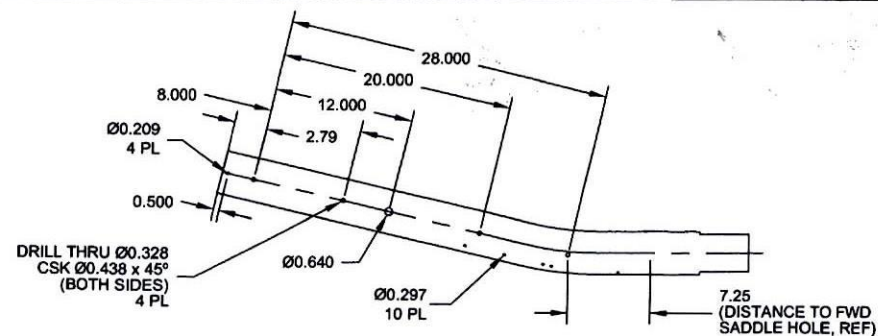
D3401-041
TOW CAP

DETAIL B SCALE 2X

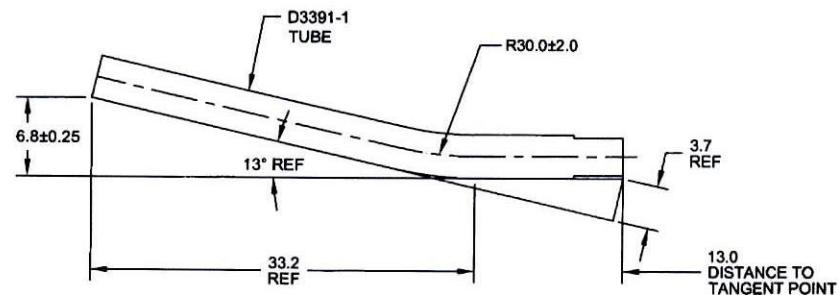
AN3C4A BOLT
D3672-1 WASHER
NAS1149C0332R WASHER
4 PL

D3391-021 FWD TUBE ASSEMBLY PARTS LIST

QTY -021	PART NUMBER	DESCRIPTION
X	D3391-021	FWD TUBE ASSEMBLY
1	D3391-1	TUBE
1	D3401-041	TOW CAP
4	D3670-4200	SPACER
4	D3672-1	WASHER
1	D4095-051	WEARSHOE
10	AELS-1032-225	INSERT
10	AN3C4A	BOLT
10	NAS1149C0332R	WASHER



D3391-021 DRILLING DETAIL



D3391-021 BENDING DETAIL (MAKE FROM D3391-1)

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 168617-A

RELEASED
2016-04-28

DESIGN	PH	DART AEROSPACE USA, INC	
DRAWN	ML	EUGENE, OR	
CHECKED	CP	DRAWING NO.	REV. J
MFG. APPR.	TS	D3391	SHEET 4 OF 11
APPROVED	TS	TITLE	SCALE
DE APPR.	TS	412 FLOAT SKIDTUBE	NTS
DATE	16.01.14	COPYRIGHT © 2005 BY DART AEROSPACE USA, INC THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

DQA: _____ Date: _____

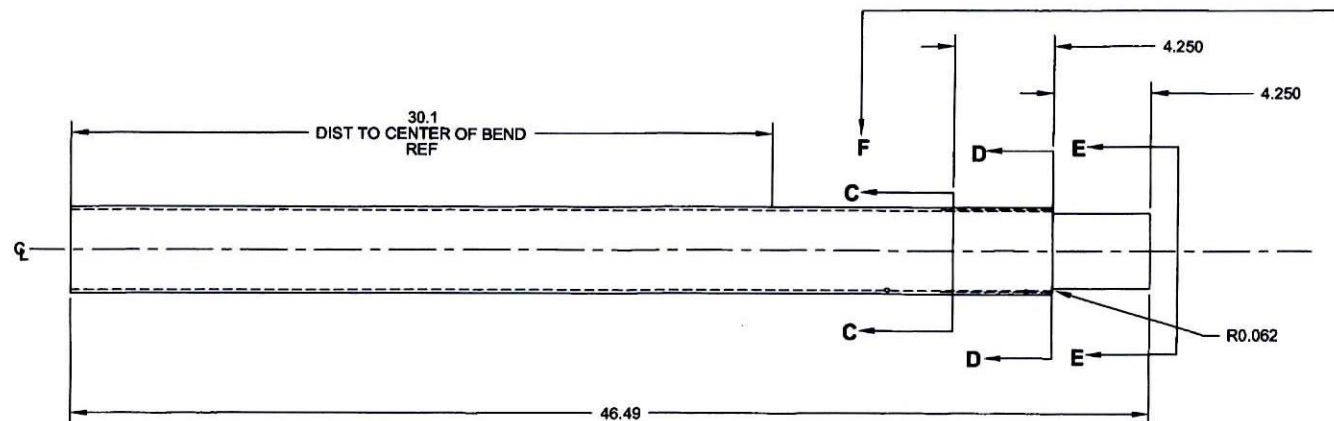


WORK ORDER NON-CONFORMANCE / UPDATE

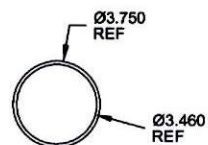
QA Closed: _____ Date: _____

Work Order update only ☐

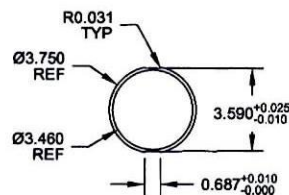
Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QS1042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER : _____					



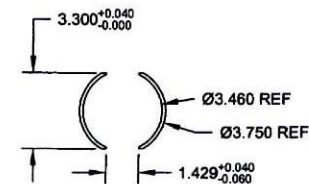
D3391-1 TUBE
(MAKE FROM D6013-047 SKIDTUBE MATERIAL)



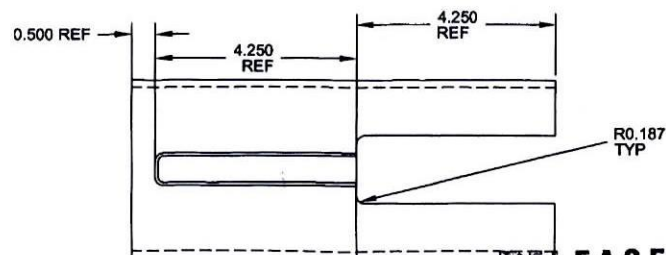
SECTION C-C



SECTION D-D



SECTION E-E



VIEW F-F
SCALE 2X

SHOP COPY
RETURN TO
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UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. _____

DESIGN	PH	DART AEROSPACE USA, INC	
DRAWN	ML	EUGENE, OR	
CHECKED	CP	DRAWING NO.	REV. J
MFG. APPR.		D3391	SHEET 5 OF 11
APPROVED		TITLE	SCALE
DE APPR.		412 FLOAT SKIDTUBE	NTS
DATE	16.01.14	COPYRIGHT © 2005 BY DART AEROSPACE USA, INC THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

RELEASED
2016-04-28

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By	
Root Cause				FAULT CATEGORY					
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
Misidentified ☐	Past Due ☐								



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER PO038933

Supplier: ATE003-VC
Atelier Debosselage
358 Principale
Calumet
QC
J0V 1B0 Canada
Phone: 819 242 5633

PO No: PO038933
PO Date: 2/2/18
Due Date: 2/5/18
Purchase Order Revision:
Revision Date:
Ship-To Contact: Baker, Diane
Phone: dbaker@dartaero.com

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground
Pymt Terms: Net 30
Freight Terms:
Special Comments:

Items

Line Item	Job	Part	Description	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	168941	D3391-021	Fwd Tube Assembly	Firmed	2/5/18	1 pcs	0 pcs	1 pcs	\$125.00/pcs	\$125.00
2	168617-A	D3391-021	Fwd Tube Assembly	Firmed	2/5/18	1 pcs	0 pcs	1 pcs	\$125.00/pcs	\$125.00
3	168760-A	D3391-021	Fwd Tube Assembly	Firmed	2/5/18	1 pcs	0 pcs	1 pcs	\$125.00/pcs	\$125.00
4	168619-B	D3391-023	Mid Tube Assembly	Firmed	2/5/18	1 pcs	0 pcs	1 pcs	\$125.00/pcs	\$125.00
5	168761-A	D3391-023	Mid Tube Assembly	Firmed	2/5/18	1 pcs	0 pcs	1 pcs	\$125.00/pcs	\$125.00
6	168761	D3391-023	Mid Tube Assembly	Firmed	2/5/18	1 pcs	0 pcs	1 pcs	\$125.00/pcs	\$125.00
7	168621-C	D3391-025	Aft Tube Assembly	Firmed	2/5/18	1 pcs	0 pcs	1 pcs	\$125.00/pcs	\$125.00
8	168621-A	D3391-025	Aft Tube Assembly	Firmed	2/5/18	1 pcs	0 pcs	1 pcs	\$125.00/pcs	\$125.00
9	168621-B	D3391-025	Aft Tube Assembly	Firmed	2/5/18	1 pcs	0 pcs	1 pcs	\$125.00/pcs	\$125.00
10	169228-B	D350-636-011	Skidtube LH, Std Wearplates, DART (Apical) Cylindrical/Aerazur Float Comp.	Firmed	2/5/18	1 pcs	0 pcs	1 pcs	\$225.00/pcs	\$225.00
11	169228	D350-636-011	Skidtube LH, Std Wearplates, DART (Apical) Cylindrical/Aerazur Float Comp.	Firmed	2/5/18	1 pcs	0 pcs	1 pcs	\$225.00/pcs	\$225.00
12	169856	D350-636-011	Skidtube LH, Std Wearplates, DART (Apical) Cylindrical/Aerazur Float Comp.	Firmed	2/5/18	1 pcs	0 pcs	1 pcs	\$225.00/pcs	\$225.00
13	167569	D350-636-012	Skidtube RH, Std Wearplates, DART (Apical) Cylindrical/Aerazur Float Comp.	Firmed	2/5/18	1 pcs	0 pcs	1 pcs	\$225.00/pcs	\$225.00
14	167568-A	D350-636-012	Skidtube RH, Std Wearplates, DART (Apical) Cylindrical/Aerazur Float	Firmed	2/5/18	1 pcs	0 pcs	1 pcs	\$225.00/pcs	\$225.00



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER PO038933

Items

Line Item	Job	Part	Description	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
			Comp.							
✓ 15	167302-B	D350-636-015	Skidtube LH, Run-on Landing Wearplates, DART(Apical) Cylind./Aerazur Float Comp.	Firmed	2/5/18	1 pcs	0 pcs 1x	1 pcs	\$225.00/pcs 18/02/02	\$225.00 ms
✓ 16	167302	D350-636-015	Skidtube LH, Run-on Landing Wearplates, DART(Apical) Cylind./Aerazur Float Comp.	Firmed	2/5/18	1 pcs	0 pcs 1x	1 pcs	\$225.00/pcs At 18/02/06	\$225.00
✓ 17	167339	D350-636-016	Skidtube RH, Run-on Landing Wearplates, DART(Apical) Cylind./Aerazur Float Comp.	Firmed	2/5/18	1 pcs	0 pcs 1x	1 pcs	\$225.00/pcs 18/02/02	\$225.00 ms
Grand Total:									\$2,925.00	

Order Notes

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 2/2/18 10:21 AM dart.baker.diane